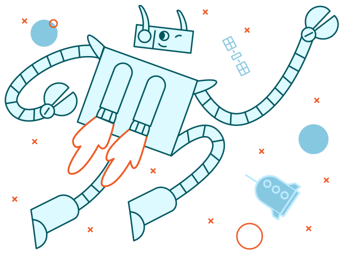
Arrays



JavaScript variables are useful for storing single values to be used in later parts of the program. However, what if you need to store a list of values, like the names of invitees to a party?

This is where arrays come in useful. Arrays are likes lists, they are a data structure that stores a sequence of values that can be added, removed, or modified.

Creating an array

To create an array in JavaScript, we write:

```
let newArray = []
```

This creates an empty array (an array with no items). We can also create the array with preset values:

```
let partyPeople = ["Spongebob", "Patrick", "Sandy"]
```

Note that in JavaScript, items in an array can be of different types.

Accessing array items

Just like characters in a string, array items are ordered and indexed. This means that every item is assigned a number starting from `0` that represents its position in the array.

Getting items

Consider the `partyPeople` array in the *Creating an array* section. To get an item using its index, we write:

```
console.log(partyPeople[0]) // Spongebob
console.log(partyPeople[1]) // Patrick
console.log(partyPeople[2]) // Sandy
```

Using an invalid index will result in `undefined`:

```
console.log(partyPeople[3]) // undefined
console.log(partyPeople[-1]) // undefined
```

Assigning items

Items in an array can be modified, that means that you can reassign them or add new items. To replace items in an array, we write:

```
partyPeople[1] = "Gary"
// partyPeople: ["Spongebob", "Gary", "Sandy"]
```

You can also assign values to larger indexes, in which case the values will be added to the array at that index:

```
partyPeople[3] = "Squidward"
// partyPeople: ["Spongebob", "Gary", "Sandy",
"Squidward"]

partyPeople[5] = "Plankton"
// partyPeople: ["Spongebob", "Gary", "Sandy",
"Squidward", undefined, "Plankton"]
```

We will look at other ways to modify an array in the *Modifying arrays* section below.

Looping

It may be useful to perform an action on each item in an array, such as to send invites to each guest:

```
sendInvite(partyPeople[0])
sendInvite(partyPeople[1])
sendInvite(partyPeople[2])
sendInvite(partyPeople[3])
sendInvite(partyPeople[4])
sendInvite(partyPeople[5])
```

In JavaScript, you can use the `for` loop and `for...of` loop to iterate over the items in an array.

Using a `for` loop

You can use the standard `for` loop to iterate over the array indexes and access each item in the array:

```
for (let index = 0; index < students.length; i++) {
  sendInvite(partyPeople[index]);
}
```

Using a `for...of` loop

Just like strings, you can also use the simpler `for...of` to iterate over the items in an array:

```
for (let person of partyPeople) {
  sendInvite(person)
}
```

Modifying arrays

Arrays in JavaScript contain several methods that modify the array in different ways. We will explore the following methods:

Method	Action
`push`	Append item to array end
`pop`	Remove item from array end
`shift`	Push item to array start
`unshift`	Remove item from array start

`push`

The `push` method appends an item to the end of the array:

```
let snacks = ["fries", "chips"]

snacks.push("Krabby Patties")
// snacks: ["fries", "chips", "Krabby Patties"]
```

`pop`

The `pop` method removes the last item of the array and returns it:

```
let drinks = ["soda", "orange juice", "tea"]

let unwantedDrink = drinks.pop()
// drinks: ["soda", "orange juice"]

console.log("We removed " + unwantedDrink + " because we hate it")
// We removed tea because we hate it
```

`shift`

The `shift` method removes the first item of the array and returns it:

```
let games = ["uno", "monopoly", "cluedo", "risk"]

let game = games.shift()
// games: ["monopoly", "cluedo", "risk"]

console.log("The first game for tonight is " + game)
// The first game for tonight is uno
```

`unshift`

The `unshift` method inserts an item to the start of the array:

```
let movies = ["No Way Home", "Multiverse of
Madness"]

movies.unshift("Uncharted")
// movies: ["Uncharted", "No Way Home", "Multiverse
of Madness"]
```

Other methods

If you would like to check out the other array methods built in to JavaScript, check out the documentation.

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